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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,045	11/18/2003	Andrew M. Sendyk	A894648US	2773

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EXAMINER	
PAN, YUWEN	
ART UNIT	PAPER NUMBER
2618	

MAIL DATE	DELIVERY MODE
06/26/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/715,045	SENDYK ET AL.	
	Examiner	Art Unit	
	YUWEN PAN	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 January 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4-7,11,12,18,21-27 and 29-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 4-7, 11, 12, 18, 21-27, and 29-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Response to Arguments

1. Applicant's arguments with respect to claims, 1, 18 and 29 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 23 and 24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claim 23 recites the limitation "the responses of the propagation channels" in line 2. There is insufficient antecedent basis for this limitation in the claim.

5. Claim 24 recites the limitation "the channel propagation matrix" in line1. There is insufficient antecedent basis for this limitation in the claim.

Claim Objections

6. Claim 1 is objected to because of the following informalities: "said" in line 5, should be "a". Appropriate correction is required.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1, 4-7, 11, 12, 18, 21-27, and 29-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clark et al ("Clark") (US007006804B1) in view of Tsuie (US00719659B2, hereinafter Tsuie).

Per claim 1, Clark discloses a communication system for simultaneous transmission, reception and restoration of a plurality of individual signals superimposed in space and frequency (see column 1 and line 50-column 2 and line 6), comprising a plurality of collocated transmitter antennas transmitting signals which reuse a common frequency band (see figure 4 and item 130), a plurality of collocated receiver antennas receiving signals which reuse the common frequency band (see figure 4 and item 140, column 2 and lines 40-50), an adaptable receiver (see column 8 and lines 22-51) which restores the original signal, the said receiver containing a set of filters, having at least one filter, which is used to process the said received or transmitted signals (see figure 2 and item 225), and at least one summing node which sums the signals produced by the said filters restoring at least one original individual signal and reducing the interference resulting from simultaneous transmission of a plurality of signals (see column 5 and lines 5-39). Clark does not expressly teach that the set of filters is adaptive. Tsuie teaches an adaptive filter within an MC-CDMA system (see column 4 and lines 61-67, see figure 3 and column 10 and lines 31-49). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Tsuie with Clark's system to improve the channel response and reduce receiving errors.

Same arguments apply, *mutatis mutandis*, to claims 18 and 29.

Per claim 4, Clark further teaches that the signal restoration is performed, on the received signals at the carrier frequency (see column 3 and line 45).

Per claim 5, Clark further teaches that the received signals are first translated to baseband and the restoration of the signals is performed at baseband (see figure 2, column 5 and lines 10-28).

Per claim 6, Tsuie further teaches the attributes (adjustable coefficients) of the said set of adaptive filters using training signals (input sequences, see column 10 and lines 31-48).

Same arguments apply, *mutatis mutandis*, to claim 21.

Per claim 7, combination of Clark and Tsuie further teaches that the attributes of the said set of filters during the pausing of the transmission of on or more of the transmitted signals (see column 8 and lines 52-63, since it is TDD system, the transmitting is on and off).

Same arguments apply, *mutatis mutandis*, to claim 22.

Per claim 11, Tsuie further teaches that the attributes of the said set of filters, using a pilot tone signal which is injected alternately into each transmitted signal in a way that does not interfere with the transmitted data signals (see column 9 and lines 61-column 10 and lines 12).

Same arguments apply, *mutatis mutandis*, to claims 26 and 27.

Per claim 12, Tsuie further teaches that the attributes of the said set of filters using spread spectrum signals (pilot signals in MC-CDMA) which are overlaid on each of the said set of data signals (see column 9 and lines 61-column 10 and lines 12).

Per claim 23, Clark further teaches that filter response is estimates of the responses of the propagation channel between various combinations of transmitter/receiver antenna (see figure 7 and item 702, column 8 and lines 23-51).

Same arguments apply, *mutatis mutandis*, to claim 32.

Per claim 24, Clark further teaches that channel propagation matrix is defined and subsequently inverted (see column 8 and lines 23-51).

Same arguments apply, *mutatis mutandis*, to claim 30.

Per claim 25, Clark further teaches that set of filter attributes is determined by adaptive techniques (see column 8 and lines 23-51).

Per claim 31, Clark further teaches that at least one of the transmitted signals, canceling the interference at the output of at least one summing node during pauses, using an adaptive algorithm which adapts attributes of the said set of filters (see column 7 and lines 34-56).

Same arguments apply, *mutatis mutandis*, to claims 34 and 36.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YUWEN PAN whose telephone number is (571)272-7855. The examiner can normally be reached on 8-5 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duc Nguyen can be reached on 571-272-7503. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Yuwen Pan/
Primary Examiner, Art Unit 2618